

Table 1S – Cores used to produce the Law Dome trace chemistry record.

Core	Drill location	Length (m)	Drill start date	Bottom Date	Time period spanned in Law Dome record
DSS0910	DSS	7	Dec. 2009	2003 CE	2009.0 – 2005.5 CE
DSS0809	DSS	10	Dec. 2008	2001 CE	2005.5 – 2001.5 CE
DSS0102	DSS	9	Dec. 2001	1994 CE	2001.5 – 1995.5 CE
DSS97	DSS	240	Nov. 1997	1792 CE	1996.5 – 1888.0 CE
DSS99	DSS	125	Feb. 2000	1840 CE	1888.0 – 1840.5 CE
DSS main	DSS	1196	Dec. 1987	≈90 ka	1840.5 – 23 BCE

These six ice cores are within 1 km of the DSS site (66°43'S 112°48'E), Law Dome, East Antarctica, and were used to produce the continuous Law Dome chemistry time series. Ice cores were selected to cover different time periods to give the highest quality dataset through that time period. DSS99 covers an older time period than DSS97, as DSS97 has continuous trace ion data to 1882 (96 m) only. DSS97, DSS99 and DSS main down to 400 m were used previously by Palmer et al., (2001).